

FOOT-OPERATED POINTING DEVICE

TECHNICAL FIELD

[0001] The present invention relates to a foot-operated pointing device.

BACKGROUND

[0002] A foot-operated pointing device has been known which operates a pointer or the like displayed on an operation screen of a computer or the like by a foot. As a conventional foot-operated pointing device, there is a foot-operated pointing device which includes a base, a moving part oppositely disposed on the base and moveable along a top surface of the base, a footrest part oppositely disposed on the moving part and rotatable with respect to the moving part (for example, see JP 2001-22512A).

[0003] In such a foot-operated pointing device, a spring and a switch which outputs a signal for a click are provided between the moving part and the footrest part. A user can feel a click feeling at a moment when contacts of the switch are switched by pressing the footrest part against a biasing force of the spring and the switch.

SUMMARY

[0004] In the aforementioned foot-operated pointing device, a built-in type general-purpose switch is used. In the case of using such a switch, the biasing force against the footrest part, and a distance from a position where the switch starts to be pressed to a position where the contacts are switched are both not sufficient. That is, the foot-operated pointing device is operated by a foot which is insensitive compared to a hand, thereby hardly providing a sufficient click feeling. Accordingly, improvement of the click feeling is required.

[0005] An object of the present invention is to provide a foot-operated pointing device capable of improving a click feeling.

[0006] A foot-operated pointing device according to an embodiment of the present invention includes: a base; a moving part oppositely disposed on the base and moveable along a top surface of the base; a footrest part oppositely disposed on the moving part; and a reaction force applying part configured to apply a reaction force to the rotating footrest part, wherein the footrest part includes: a footrest member rotating with respect to the moving part around a first direction intersecting with an opposite direction between the moving part and the footrest part, and having one end and the other end in a second direction intersecting with the opposite direction and the first direction, the reaction force applying part applies a reaction force to the footrest member in a case of a first rotation operation in which the one end of the footrest member is close to the moving part, the reaction force applying part includes: an abutting part provided in one of the moving part and the footrest part and having a first abutting surface and a second abutting surface arranged in the second direction; a following part provided in the other of the moving part and the footrest part and configured to follow the first rotation operation of the footrest member to relatively move along the first abutting surface and the second abutting surface while abutting on the first abutting surface or the second abutting surface; and a biasing member configured to cause a biasing force to act between the following part and the first

abutting surface, and between the following part and the second abutting surface, the following part abuts on the first abutting surface and the second abutting surface in an order thereof in the first rotation operation, and the second abutting surface is inclined with respect to the first abutting surface.

[0007] In the foot-operated pointing device, the second abutting surface is inclined with respect to the first abutting surface. Therefore, a reaction force applied to the abutting part by the following part is changed instantaneously and largely at a time when the following part is transferred from the first abutting surface to the second abutting surface. As a result, a click feeling is provided to the user through the footrest part. Therefore, according to the foot-operated pointing device, it is possible to improve the click feeling by using a slope of the second abutting surface with respect to the first abutting surface.

[0008] A foot-operated pointing device according to another aspect of the present invention may further include a support part provided in the moving part to support one of the abutting part and the following part, wherein the support part is slidable with respect to the moving part. In this case, the following part stably and relatively moves along the first abutting surface and the second abutting surface. Accordingly, the abutting state of the following part with respect to the first abutting surface and the second abutting surface can be stabilized and the click feeling can be improved.

[0009] A foot-operated pointing device according to another aspect of the present invention may further include a support part provided in the moving part to support one of the abutting part and the following part, wherein the support part is rotatable with respect to the moving part. Therefore, it is possible to stabilize an abutting state of the following part with respect to the first abutting surface and the second abutting surface even in a case in which a rotation mechanism is applied to the support part.

[0010] A foot-operated pointing device according to another aspect of the present invention may further include an adjusting part configured to adjust an abutting state of the following part with respect to the abutting part. In this case, it is possible to realize a neutral state in which the abutting part does not receive a force from a biasing member and the abutting part comes into contact with the following part. Therefore, it is possible to more improve a click feeling.

[0011] A foot-operated pointing device according to another aspect of the present invention may further include a first detection part configured to detect a movement of the moving part; a second detection part configured to detect a rotation of the footrest member with respect to the moving part; and a controller configured to instruct movement of a pointer based on a detection value from the first detection part and instruct a click when a detection value from the second detection part becomes equal to or greater than a first threshold value and thereafter, becomes equal to or less than a second threshold value, wherein the controller may stop instruction of the movement of the pointer when the detection value from the second detection part becomes equal to or greater than a third threshold value indicating that the detection value approaches the first threshold value in a state in which the movement of the pointer is being instructed and the detection value from the second detection part is below the first threshold value. In this case, the movement of a pointer on an operation screen of a computer or the like is stopped. The user who has seen that the pointer no longer